

(Sicily), whose first generation was well figured by Hübner under the name of *sphyrus*, and whose second and third, similar to each other, were accurately described by Zeller in 1847 and named *aestivus*. Less far south one meets in the greater part of Southern Europe with a tri-generate race or group of races, which are transitional between *bi-generata* and *sphyrus* in both spring and summer. The first brood is larger, brighter, of a deeper yellow and with a more extensive black pattern than that of *bigenerata*, but far from so extensive as in *sphyrus*; the second and third are on the whole similar to *aestivus* from Sicily, but never so large as the extreme individuals of the latter and they never produce the forms *angulata*, Vrtý., and *zancleusoides*, Rag., which occur in Sicily; I propose the name of *emisphyrus* for this race, more generally distributed in the south of Europe, taking as typical form the first brood of Florence.

(To be continued.)

Dwarf Lepidoptera. (With one plate.)

By the REV. C. R. N. BURROWS, F.E.S.

A little time ago Mr. A. A. W. Buckstone submitted to me some very tiny specimens of *Agriades coridon* which he had taken upon a hilltop in Surrey. These insects were captured in July, 1917, and were exhibited at the meeting of the South London Entomological and Natural History Society on October 11th of the same year.

I was very pleased to have these specimens, as they promised to help me to answer a question which had forced itself upon me in the course of my investigations of the genitalia of the *Psychidae*. In that group, and more or less elsewhere, the point has had to be decided as to how far size and development may vary in a single species, and how far the size of the genitalia agrees with the size of the insects to which they belong.

I therefore made preparations of males of these specimens, and compared them with preparations of the normal sized ones. I did the same with two other species, extremely small specimens of which were to hand. I now present the result of my examination. The drawings profess to be merely outlines, but are all made to exactly the same scale. I have left out the spines and hairs as likely to confuse the matter. The normal sized insects are figured to the right of the Plate, the dwarfs to the left. I quote the average size of normal specimens from Meyrick's "Handbook":—

Vanessa io 58.68 mm. The dwarf measures about 47 mm.

Agriades coridon 30.37 mm. The dwarf from the hilltop measures 25 mm.

Mr. Buckstone found a rather better developed form at the bottom of the same hill, and adds in his letter to me: "Besides these, full-sized *coridon* occurs generally over the entire slope, but appears later than the smaller forms, and may be found when the other two forms are over." My specimen measures about 28 mm. and is figured in the centre of the Plate. (Plate iv.)

Abraaxa grossulariata 36.43 mm. The dwarf measures about 30 mm.

My dwarf specimens are therefore well below the minima given by Meyrick. Now, do the genitalia exhibit the same difference in size

which exists in the wingspread of the insect itself? I think that we must acknowledge that the difference which exists is very much less than we should have expected.

These dwarf insects are doubtless starved more or less. Evidently in the *A. coridon* from the hilltop and bottom the food supply has been very short. The insects have been able to develop, but are dwarfed. Mr. Buckstone notes that the small males were not ever found paired, although the normal sized ones were often so found. The normal males paired with the dwarf females. Evidently in this case, although the male organs appear to be complete, the insects lacked vigour or power to copulate.

It is evident that the genitalia do vary with the size of the specimen, but not at all in the degree which we should be inclined to expect. I feel that I am not much more forward than I was before, only I see that it behoves one to be careful about distinguishing species by measurement alone.

My drawings may perhaps interest some who have never looked into the subject of genitalia, when they observe that the organs of a little butterfly like *A. coridon* are very much larger than those of a big species like *V. io* and than those of *A. grossulariata*.

SCIENTIFIC NOTES AND OBSERVATIONS.

AGRIADES THETIS RACE VECTAE, VERITY.—With reference to Dr. Verity's account of this form may I give a few notes as to a series of 27 ♂s and 9 ♀s of *A. thetis*, which I took on the downs above Ventnor, Isle of Wight, in the first week of September, 1913. These specimens do not altogether agree with Dr. Verity's description. The race is on the whole small. The blue of the males does not appear to me to differ from that of the few other British specimens in my possession, though it is certainly of a brighter and more sky blue tint than the blue of males from N.W. Asia Minor. Nine only, exactly 33 per cent., have premarginal black dots at all on the inferiors. The females are dark and small, with little or no blue scaling on the bases of the wings. Four are almost or quite destitute of orange lunules, and all show traces of blue on the marginal side of the submarginal black spots on the inferiors. On the under-side both sexes are dark, but not I think darker than the average of English specimens, which have a much darker underside than my specimens from Asia Minor. In only one specimen are both the basal black dots of the anterior wings absent. In 14 others, among them 5 females, the lower of the two black basal dots is absent or more often obsolescent. The orange lunules are more often bright than pale. The Ventnor race in its second brood of 1913 certainly seems to me to approach the normal British form of *thetis* much more nearly than to *rectae* as described by Dr. Verity. One wonders whether there were any special climatic features about the spring of 1875 which would perhaps explain the abnormality of the series then taken by the late Conquest at Ventnor. —P. P. GRAVES (Major), G.H.Q., British Force, Constantinople. March 18th, 1919.